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FIVE LETTERS

To Sir JOSEPH BANKS Baronet
Preſident of the Royal Society,

ON THE

Subject of Cochineal Inſects, diſcovered at Madras,

By *JAMES ANDERSON* M. D.

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With a Copper Plate Engraving Annexed, of the different Insects, mentioned in the Letters, from the Drawings of Baron Reichel.

Alſo an Engraving of the *Opuntia Major Spinulis obtuſis mollibus, & innocentibus*, and the Plan of a Nopalry in the Biſhoprick of Guaxaca in the Kingdom of Mexico, Extracted from the Second Volume of Sir Hans Sloane's History of Jamaica, for the uſe of Country Gentlemen who may be diſpoſed to make Plantations, and are not in poſſeſſion of that Work.

> ——————— Milesia magno
> Vellera mutentur, Tyrios incocta Rubores.
> Virg. Geor. Lib 3.

MADRAS: Printed by CHARLES FORD.

AT THE HONORABLE COMPANY'S PRESS.

MDCCLXXXVII.

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G.R. III
BRITISH MUSEUM

To Sir JOSEPH BANKS Baronet,

PRESIDENT of the Royal Society.

DEAR SIR,

HAVING found the Cochineal Inſect attached to a graſs called by the *Tamuls*, *Oopungiriki* or ſalt graſs, the common food of the Horſes here, which is jointed and creeps along the ground taking freſh root and ſending off lateral branches at the articulations with ſmall pointed leaves embracing the ſtalk, an erect ſpike, with *ſeſſile* flowers, each having three double oval purple coloured *antheræ*, with two feathered white *ſtigmata* an oval ſhaped compreſſed ſeed, which grows only on a clay ſoil common in this neighbourhood and all along the coaſt where the *Mineral Alkali*, *Sea Glauber* and *Epſom Salts*, effloreſce like hoar froſt on the ſurface and where on digging there are found *Nodules* of lime ſtone pieces of *Selenites*, branches of *Oſteocolla*, *Plume Alum*, and *Deliqueſcent Salts*.

I carefully examined it with the help of magnifying glaſſes and found it correſpond with the diſcriptions of *Lewen hoeck*, *Reaumeur*, *Linnæus*, *Sir Hans Sloan* and the French Encyclopœdia as well as with the Cochineal of the Shops.

The Inſect as it is found on the graſs is in its *Chryſalis* ſtate containing the *germ* or *ova*, and multitudes of the young are daily iſſuing of a red colour with ſix legs and two *antennæ*: ſome with wings are ſaid to be the males.

I have macerated them in water and ſpirits of wine, and find it communicates to both a colour equal to the Cochineal of MEXICO.

As the expence, however, of collecting it in its preſent ſcattered ſituation may prevent its becoming an article of trade from this coaſt; I have planted a piece of ground with the graſs, on which I have ſtrewed a great number of the inſects, as well as ſet out 1000 *Opuntia* plants for the purpoſe of cultivating them in the Mexican method, with the ſucceſs of which I ſhall from time to time inform you.

Your diſtinguiſhed character in the culture of Natural Hiſtory will apologize for this communication, and excuſe my tranſmitting you a ſmall box of the Cochineal prepared by roaſting over the fire, together with ſome of the Inſects on the graſs on which they are found in a native ſtate,

I am, with much eſteem,
Fort St. George | Dear Sir,
Dec. 3d. 1786. Your very Obedient Humble Servant,
JAMES ANDERSON.

To Sir Joseph Banks Baronet,

President of the Royal Society.

Dear Sir,

HAVING on the third inſtant ſent you ſome Cochineal Inſects found here, which from their being recently collected I fear may be ſpoiled on the paſſage, as I now find they require a conſiderable time to dry; I take this opportunity of the Phœnix and Manſhip ſailing to tranſmit a ſpecimen which is better cured.

At this ſeaſon I find the *Cicadæ ſpumantes* on various *graſſes*, and on ſome *ſyngeneſias* in places adjacent to where the Cochineal is found, and numerous collections of the *Cimex punctatus* on the *mimoſa Arabica*, alſo a beautiful *Aptera* with ſix legs and two *antennæ*, about the ſize and ſhape of the *Cotyledon* of a pea on a *purcellan* leafed *Salicornia*.

As the Vitriolic and Marine ſalts prevail much near the Coaſt, the Nitrous acid is not found to generate nearer than ten miles from the Sea where it is in ſome places manufactured for ſalt petre, and the *Oldenlandia umbellata* with a decoction of the roots of which the beautiful and permanent red is given to Cotton will only yield a colour when cultivated on the ſea Coaſt—Above one half of the lands within ſeveral miles of the ſea ſhore conſiſts of ſuch ſoil as I deſcribed in my former Letter, and produces the Cochineal Inſect in conſiderable quantity, and in all probability, as there are many ſalt lakes on the Coaſt their banks produce abundance of the graſs on which the Inſect is found—This ſpecies of graſs which I think approaches neareſt to the *Aira* *ſpicata* will not grow on ſweet grounds; but only in places where the *Scirpus* and *Cypreſs* graſſes with various kinds of *Salecornia*, and *Coldenia* are found, and theſe lands are conſidered as waſte.

There are generally only one or two on one joint of the graſs, but ſometimes they amount to five or ſix, ſo that one ſtalk will have twenty or thirty Inſects upon it, yet it is by no means clear, either that it can be cultivated, or that the cultivation will be attended with advantage, for the *Cactus* here is armed with very long ſharp thorns whereas that of America is ſaid to be inoffenſive, and the Crimſon decoction of the Cochineal in the trials I have yet been able to make, does not change to the colour of arterial blood when a ſolution of Tin is poured into it.

As it agrees however in the other characters of the *Coccus Cacti* in the Linnæan ſyſtem I have diſtinguiſhed this Inſect—*Hemiptera Coccus Airæ ſpicatæ Madraſpatenſis.*

For farther illuſtration of this minute ſubject, I have been ſo fortunate as prevail on a friend of mine, Baron Reichel, to take the ſeveral drawings which accompany this.

No. 1. The graſs with the Inſect upon it.

2. The Fly ſuppoſed to be the male viewed with the Microſcope.

3. A Microſcopical view of the *Coccus* with the young Inſects upon it ſuppoſed to be the female.

4. The *Cryſalis* diſengaged from its ſilky envelope.

N. B. The Microſcope by which theſe drawings were taken with every attention to proportion and exactneſs, is the make of Gilbert Optician, Ludgate-Hill London—Glaſs No. 4.

To Sir JOSEPH BANKS Baronet
PRESIDENT of the Royal Society.

DEAR SIR,

SINCE writing to you by the Ship Phœnix, I have had above a hundred pounds weight of the Cochineal inſect brought in from the adjacent country, and learn from correſpondents they may be collected even in greater plenty to the northward, at *Duraſpatnam* about 50, and *Nellore* 90 miles from hence.

The young creep on any thing in their neighbourhood indifferently, a leaf of *Opuntia*; a ſpike of glaſs, or a clod of earth; but in our management do not ſurvive eight days.

The great quantity with which I have been ſupplied, from which millions of young have come under inſpection, has however enabled me to inveſtigate the Fly more minutely, and I now find it is furniſhed with four *procumbent* wings, which brings it more properly under the *Kermes*, than *Coccus* kind of the *Linnæan* ſyſtem, but as the character *Saltatoria* is wanting, it may be a new genus; to compleat the diſcription of which the microſcopical view of a *Caterpillar* found within the outer *Coccus* amongſt the young inſects is annexed No. 5.

Theſe Caterpillars are as numerous as the male flies, which do not exceed the proportion of one male to two hundred females.

Swammerdam obſerved that ſuch a Caterpillar on the dog Roſe and black poplar produced a moth or fly, as repreſented in Doctor Hills tranſlation Tables XLIV and XLV but hitherto I have ſeen no change of ſtate in theſe Caterpillars.

I come now to acquaint you I have found an Inſect on the *Phyllanthus Emblica* or *Nellikai* of the *Tamuls* of a purpliſh red colour and ſurrounded with a ſilky covering, of ſo looſe a texture, that the threads of it which are as fine as thoſe of the ſmalleſt ſpiders web, may be drawn out to the length of ſeveral inches before they break.

This inſect is now *oviparous* and depoſits its eggs in the ſilky neſt, one of them under the microſcope diſcharged 13 eggs which appeared like a ſtring of purple beads.

I have hitherto ſeen no flies belonging to them, and am therefore unable to give them any generic name, but they appear ſo like the drawings for the female Cochineal deſcribed by Mr. Ellis, Philoſophical Tranſactions Vol 52d, part 2d, page 664, of which a few days ago I obtained a Copy— that I have prevailed on my friend Baron Reichel to take a microſcopical drawing of this Inſect which is annexed and marked No. 6.

Linnæus in his notes ſays the *Aphis* is *viviparous* in ſummer, and *oviparous* in autumn by analogy it may be preſumed, that altho this Inſect is *oviparous* at preſent, it may become *viviparous* in the months of May and Juue.

Finding a Caterpillar likewiſe incloſed in the ſilky covering of theſe Inſects, a drawing thereof, as it appears in the microſcope, is annexed No. 7.

I have likewiſe found a viviparous Inſect covered with white *Farina* on the *Robinia Grandiflora*, or *Agaty Jumbo* of the *Tamuls* on the *Pſidium Quajava* and *Hebiſcus Roſa Sinenſis* with a nipple between the two foremoſt pair of legs, a drawing of which is encloſed No. 8.

Theſe Inſects are only of a purpliſh orange colour; but obſerving the *Aphis* on the cabbage leaf green, on the *Apocinum-Scandens* yellow, and of a chocolate colour on the orange tree, I am diſpoſed to believe the colour of Inſects is much affected by the nature of their food, and therefore have placed all of them on the *Opuntia*.

The *Abbé Reynal*, in his laſt edition, ſays the *Opuntia* in MEXICO muſt be carefully planted and cultivated eighteen months before it will produce any Cochineal, and *Pluckenet*, and after him *Sir Hans Sloan*, whom all ſucceeding writers have copied, expreſly declare the *Opuntia* bearing Cochineal to have only ſoft, inofenſive thorns; now I am free to ſay, the wild Plum, Sloe and Raſberry, as well as the Orange tree are more armed than after they have been cultivated, the *Mimoſa Arabica*, known here by the name of the *Cock-ſpur-thorn*, when cultivated in a garden almoſt looſes that diſtinction and the hardeſt wood I have ever obſerved grows without culture, *Linnæus* in his *Philoſophia Botannica* Page 50 ſays—"*ſpina eſt mucro plantæ e ligno plantæ protuſus, Prunus, Rhamnus, Hippophæ, Celaſtrus, Lycium, cultura ſæpius evaneſcit; ut in Pyro.*

If the ſame effect is produced on the *Opuntia* by the like means, which is more probable as the prickles are deciduos, the end I had in view of introducing the culture of Cochineal may be accompliſhed; becauſe although my *Opuntias* have not been planted out three months, they are already putting forth young leaves, on which I perceive a few of the laſt mentioned inſects beginning to faſten.

Having been ſolicitous however to attend to ſuch reſpectable authority, I have

I have ſent copies of the drawing and diſcription of the plant *Sir Hans Sloan* ſaw in *Mr. Worley's* garden in Jamaica, to Hydrabad and Bengal.

I am with Eſteem,
Dear Sir,
Your moſt Obedient and very
Humble Servant
JAMES ANDERSON.

Fort St. George
Feb. 20th 1787.

To Sir Joſeph Banks Baronet.

PRESIDENT of the ROYAL SOCIETY.

DEAR SIR,

IN addition to my letter of the 20th ultimo I beg leave to inform you, I have had ſome pieces of Flannel, Shawl, and Sattin, prepared with allum and cream of Tartar, and afterwards boiled in a decoction of cream of Tartar, and the graſs Cochineal, of which the incloſed ſpecimens will I hope not prove unworthy of your inſpection, as the colour is ſtruck into white materials without the aſſiſtance of any colouring drug that has been known heretofore, and ſimply as I have ſtated it.

I have not yet been able to aſcertain the fly of the *Phyllanthus Emblica*; but finding that of the *Pſidium Quajava*, *Hebiſcus Roſa Sinenſis*, and *Jumbo* of the *Tamuls*, likewiſe on the *Annona ſquamoſa* or *Atamarum*, and *Ara-Nellikai* of the *Tamuls*, as well as on my *Opuntia* plants.

I placed branches of the *Guava Tree* covered with the Inſects on the *Opuntia* leaves, which have ſince multiplied to that degree, that ſome of the leaves are intirely covered with a white hairy ſcurf—from the *Opuntia* leaves I encloſe the following drawings.

No. 9. The female.
10. The Fly.
11. The Caterpillar.

The Caterpillar is ſo intimate a companion with all theſe Inſects, I am almoſt perſuaded it is a *mule* or *ſpadonis*, as we ſee amongſt bees and ants.

All the hairs repreſented on the female, fall off about the time ſhe depoſits her young, and ſerves to ſhelter them till they faſten themſelves to the leaf of the *Opuntia*.

The two very remarkable hairs of the Fly are perfectly opaque and white, and only a little longer than the body.

The Body of the Fly is of an Amber colour.

The wings, before the Fly comes from under the cover of the hairy cruſt are colourleſs and tranſparent; but after it has iſſued from that covering. and been ſome days expoſed to the open air they become of a crimſon hue; they amount only to two in number.

The *antennæ* conſiſt of ten joints at each of which are three ſhort hairs.

The Eyes, two remarkably black ſpots immediatly behind the antennæ.

The head is very cloſe to the thorax.

The abdomen is ſhaped nearly like that of the dragon-fly.

The legs conſiſt of three joints and altogether hairy: and his whole ſize ſo ſmall as with difficulty to be diſcovered with the naked eye.

I am with eſteem
Dear Sir,
your very obedient Servant.
JAMES ANDERSON.

Fort St. George,
March 20th 1787.

To Sir Joſeph Banks Baronet,

PRESIDENT of the ROYAL SOCIETY.

DEAR SIR,

I SIT down to acquaint you I have found the Cochineal of the *Phyllanthus Emblica* mentioned in my Letter of Feb. 20th, not only on that Tree; but likewiſe on the *Ammam Pacherichi Poondoo* of the *Tamuls or Parietaria Indica* of *Linnæus*, and on the *Chindel Coddi* of the *Tamuls*, or *Tippa Tiga* of the *Talingas.*

Having no other object in view beſides the illuſtration of natural knowledge, and my declared intention of introducing the culture of Cochineal here, though not for mortals to command ſucceſs; yet you may be aſſured I wiſh to deſerve it; for having been ſo happy as to be led into a correſpondence with you by an accidental diſcovery, I have ſpared no pains to ſupport its tending to the purpoſes I have mentioned, and crave no farther indulgence than may fairly be admitted.

It is true that on diſcovering the graſs Inſect on the 20th of laſt November, the ſemblance and richneſs of colour induced me to think it a *Coccus*, and while I could ſee only two wings on the male fly, was firmly perſuaded it might prove the *Coccus Cacti*, as you may perceive by my ſecond Letter; in which opinion I continued till ſuch time as I had collected a conſiderable quantity, and by placing the fly in ſuch a manner as to diſtend the wings, plainly ſaw there were four, when I thought it a *Kermes* more eſpecially as Linnæus mentions a *Kermes graminis* of the *Fauna ſwecica*, but conſidering the *Kermes* to be an Inſect well known to himſelf, and that mine did not poſſeſs the character *Saltatoria*, I was driven to the neceſſity of conſidering it a new genus; for it can never be preſumed that the genius of Linnæus would affix the character *Saltatoria* to a genus the males or winged part of which only poſſeſs that character.

Indeed the males of all the three different Inſects I have diſcovered leap like a flea, which renders it very difficult to catch them, of which I can ſpeak more certainly, having ſince writing you, diſcovered the *Phyllanthus Emblica* Inſect in conſiderable number not only on that Tree, but likewiſe on the plants I have mentioned; which, by placing branches covered with the Inſects under a glaſs ſhade, has enabled me to find the male fly, the account of which fly is all that remains to compleat the deſcription of three new Inſects, each conſiſting of Males, Females, and Spadones: and as it may occaſion ſome ſurpriſe I ſhould venture on untrodden ground, by introducing theſe, *Drones*, *Mules*, or *Spadones* into a genus which has already been deſcribed by ſome able naturaliſts, I can only ſay in my own juſtification, that having eſtabliſhed the genus in the deſcription of the Males and Females, I have been convinced the *Caterpillar* belongs to the genus by the circumſtance of finding them amongſt the young of the graſs cochineal, betwixt the outward ſhell, and the *Aurelia*, which you will not wonder at in me who profeſſes no attachment to any ſyſtem, farther than it aſſiſts diſcription.

After the account I have given of the *Phyllanthus Emblica* Inſect, ſo much agreeing with the Female Cochineal deſcribed in the Philoſophical Tranſactions, it may perhaps be expected the Male Fly ſhould likewiſe correſpond—but believing your learned ſociety to have more liberal ideas of nature, I muſt without reſerve acquaint you he is conſiderably different, altho' not ſo much ſo as to remove him from the genus *Coccus*.

The *Antennæ*, are as long as the body of the Inſect, having a remarkable joint at their inſertion and ten other articulations juſt perceptible with the aſſiſtance of the Microſcope.

The Eyes, large jet-black ſpots, one on each ſide of the Head.

The Head, globular, and ſet cloſely on the *Thorax*.

The whole Head (the Eyes excepted) *Thorax* and *Abdomen*, are of a homogeneous, tranſparent, appearance, like Amber in colour.

The wings only two in number, *procumbent*, and twice as long as the *Abdomen*—At the extremity of the *Abdomen*, are two little knobs, like the commencement of hairs, accompanying this is likewiſe a Drawing by Baron Reichel, marked No. 12.

Although I have not yet been ſucceſsful in feeding this Inſect on the *Opuntia*, yet as the leaf of the *Chindel Coddi* is ſo large and ſmooth, it is uſed here as a plaiſter for the maturation of Boils—I have placed a row of the Plants round one of my Plantations of *Opuntia*, with a view to collect the Inſects from it, juſt before they begin to ſpin their web.

In the *Vydeeoodoo Shaſter*, or Medical text of *Darmantree*, and I believe likewiſe in that of *Aſhvanadevudoo*, writings of ſacred authority amongſt the Bramin Phyſicians of this part of India, a ſugar made from Decoction of the *Tippa Tiga* is directed as a remedy in a ſpecies of their Noſology, named *Vatum Mekum*.

Vatum means air or wind in the *Shaſter* writings, and *Mekum*, internal heat.

All pains in the Limbs attended with ſwelling, ſuch as the *Gout*, *Arthritis* and *Rheumatiſm* are claſſed by *Darmantree* under the the head *Vatum*; and *Mekum* the head of Diſeaſes of heat; ſo that *Vatum Mekum* according to him is a compound Diſeaſe, ariſing from redundance or decompoſition of air, and heat or Inflammation.

I mention theſe circumſtances in proof of the wholeſomeneſs of the *Tippa Tiga*, as the fittneſs of its jucies as a food for Inſects may probably depend on this circumſtance, ſeeing they are ſeldom or never found on plants that are noxious to man or animals; and I further apprehend it to be no other than the *Meniſpermum cordifolium*, mentioned in the Hort. Mal. VII. F. 21."

Having now compleated the diſcription of three new Inſects, the firſt on graſs a new genus will ſtand in the *Linnæan* Syſtem moſt naturally between *Kirmes* and *Coccus*, under the generic name *Chloeoon*, or graſs Egg.

The ſecond of the *Nellikai* Tree, a new ſpeices of *Coccus*.

The third of the *Guava* Tree, a new ſpeices of *Coccus*.

Theſe being the Trees on which I firſt found them.

I muſt here take leave to inſert ſome remarks of Doctor Patrick Ruſſell at Vizagapatam, on a ſpecimen of the graſs Cochineal, which I tranſmitted him ſome time ago, and on whoſe accuracy I have a well founded reliance.

" In comparing the new Cochineal with a ſmall parcel of the Spaniſh, the
" grain appeared much ſmaller, more ſplendent, and there was little or none
" of the whitiſh duſt obſervable, with which the Spaniſh is uſualy beſtrewed
" circumſtances which may be partly owing to the drying or preparing &c.

" Three grains weight ſelected from each parcel of the largeſt grains of
" Cochineal were found as follows, new Cochineal 43 grains, the Spaniſh
" 14.

" Three grains taken indiſcriminately from each parcel, the grains of
" Cochineal when counted, were found as follows upon three different
" trials, new Cochineal 63, 66—60, Spaniſh, 23, 19—22.

" An infuſion of five grains of new Cochineal in three drams of common
" water (the Cochineal being finely pounded) gave a good tincture, but
" after three days became putrid and offenſive in an open veſſel, five grains
" of the Spaniſh, treated in the ſame manner ſhowed no ſigns of putrifac-
" tion in leſs than a week or more, this may be accounted for from the
" different ages of the drug, and the mode of its preparation.

" Five grains of the new Cochineal digeſted in half an ounce of Spirit of
" Wine, afforded to my eye a brighter tincture than that prepared from the
" Spaniſh in the ſame manner, and maintains the preference though two
" months are nearly elapſed, this tincture though preferable to the eye

" makes little or no impreſſion on paper, while the Spaniſh gives a red
" Ink colour, both tinctures were equally dilute and ſo far unfit for Ink;
" another circumſtance remarkable is the difference in dryneſs of the two
" Cochineals, owing partly perhaps to the mode of drying partly to age,
" the Spaniſh was eaſily reduced to powder, the Madras by trituration was
" turned into paſte."

In addition to what Doctor Ruſſell has ſaid, I muſt obſerve, the freſh gathered Inſects yeild a brighter colour as after roaſting to kill the young they acquire a conſiderably darker hue, the want of whiteneſs on the outſide, is owing to the ſilky ſhell being carefully picked off, whether this trouble is proper or not, I am yet at a loſs to determine, but even the proper ſkin of the *Aurelia* is of a cloſer texture as he very juſtly obſerves is more ſplendent, and when thrown into water without previous trituration gives out none of its colour, whereas the criterion amonſt Merchants of genuine Cochineal, is the darting of red rays, from it even to the bottom of a glaſs of water ſoon after immerſion; perhaps this quality is what preſerves our Inſect from total deſtruction, during the *Monſoon*; I obſerve too that on ſome graſs, cultivated ſo as to grow more luxuriant, the Inſects have been found conſiderably larger than on the waſte lands.

The Specimen he uſs'd had been expoſed to the Sun every day for two months, when the Thermometer in the Shade was about 78° yet it could not be reduced to a powder, owing to fat with which it abounds; and I think, ſheilds it from the action of acid Salts—Yet it readily communicates a Pompadour or deep Red colour to woolen and animal matters, when uſed in the quantity Docter Lewis in his notes to the Tranſlation of Newmans Chemeſtry, ſays he found neceſſary of the Silveſter Cochineal, and a decoction made in lime water becomes Purple, which colour it in ſome degree imparts to Linnen and Cotton.

By means of a friend, Captain Doveton, I have traced the exiſtence of the graſs Cochineal all the way from this place to Vizagapatam, and although I have not been able to find it on any plant beſides the graſs mentioned in my firſt letter, and on that only in its *chryſalis* ſtate, when the whitneſs of its ſilky envelope renders it conſpicuous, yet it appears to me any quantity, that could be brought into uſe may be collected, as the fields from whence I have had every Inſect brought that could be found are again as plentifully ſtock'd in five or ſix weeks after, as ever; and in all probability they may be found every day in the year except the month of October, when the country is covered with water.

The expence of collecting and curing them I ſuppoſe could not be under five or ſix ſhillings a pound, ſo they could not be brought to market in Europe at a lower rate than half a guinea the pound, with reſpect to colour too I muſt obſerve it may require much attention to diſcover the beſt time for collecting and curing Inſects, for in the account of Perſia in Harris's voyages there is the following remark of Sir John Chardin.

> “ In the places ajoining to Morant grow plenty of fruit the beſt of all in Media, but that which is moſt particuliar, in theſe parts is this, that they here gather Cochineal, though in no great quantity nor for any longer time than only eight days in ſummer, when the Sun is in Leo, for before that time the people ſay it doth not come to maturity, and after the worm from which they draw the Cochineal makes an hole in the leaf in which it grows, it is loſt. The Perſians call Cochineal *Kirmes* from *Kirm*, which ſignifies a worm, becauſe it is extracted out of worms”.

For my own part too, it may not be improper to acquaint you, I have uſed the term *Cochineal* in all theſe letters, as it is underſtood by the Spaniards, in a general ſenſe; and although I have no room to doubt the Graſs Inſect is a new genus, the term is not leſs neceſſary for conveying any idea, to perſons who have not made this ſubject a particular ſtudy, and being ſtill of opinion this Inſect may be brought forward as a new article of Trade, and the identical ſpecies of *Cochineal* of *Mexico* diſcovered in this Peninſula, I have induced ſeveral of my friends on different parts of the coaſt to make plantations of *Opuntia*, whom I furniſh with copies of all the letters I write you, as well as ſome in Bengal and Bombay, that no time may be loſt in forwarding this work, which I hope will meet your approbation, by being made public in Europe.

And I take this opportunity of the departure of a Daniſh Ship, *The Treaſurer*, to write you, as well as to tranſmit copies of my former letters, by Captain Cox of this Eſtabliſhment, who goes to Europe a paſſenger on board, leſt any accident ſhould have prevented the originals coming to your hand.

The Species of *Opuntia* I am cultivating, is the *Opuntia Major Folio Oblongo Rotundo, Spinis longiſſimis et validiſſimis confertim naſcentibus, Flore luteo*, deſcribed in Sir Hans Sloane's ſecond Vol. of the Hiſt. of Jamaica, pages 149, 150, 151 and 152, excepting that the Prickles are perfectly ſtreight, and the outward *Petals* of the Flower red on the outſide, ſo that when blown it appears like a yellow Roſe, *Striis Rubris Variegatis*.

In regard to the Flower, it approaches nearer Sir Hans Sloane's next ſpecies page 152, which I obſerve Linnæus has omitted, and taken his deſcription of the Cactus Cochinilifer, *Flore Sanguineo*, from Dillenius.

It grows wild every where in this neighbourhood, and in *Coimbatoor*, the cultivated fields are incloſed with it, as well as the gardens about *Pondicherry*; which is the only uſe to which the natives here apply it, who believe no ſerpent can live near it.

I have no doubt it is the ſame plant as the *Tuna* of Mexico, which Doctor Ruſſell aſſures me Doctor Alſton at Edinburgh, and Mr. Geoffroy at Paris, believed on the authority of Doctor Moultrie, and Doctor Houſton, to be the *Cactus Cochinlifer*, but whether by Culture it may be brought to the exact diſcription of the *Tuna Mitior* of Plukinet Sir Hans Sloane and Dellinius, or whether the *Nopal* of Mexico is a Diſtinct ſpecies of *Opuntia*, time muſt determine.

The product of the *Chloeooti* or graſs Inſect being a *Pompadoure* or *Capuchin* Colour ſo much eſteem'd as ſometimes to become the general faſhion may entitle it to be collected, and the proſpect of rearing Cochineal in this Peninſula in addition to the Trade of Great Britain induces me to have theſe letters printed for the purpoſe of a more extenſive communication than could be ſupported in writing.

I am with much Eſteem,
Dear Sir,
Your very Obedient
Humble Servant
JAMES ANDERSON.

Fort St. George
Apr. 26th 1787.

FINIS.

Mr. Nisbett
54 Marlboro St.

G.R. III
BRITISH MUSEUM